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| 10/616,060      | 07/09/2003  | Harris A. Reynolds JR. | 09432/246002        | 9532             |

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12/22/2005

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EXAMINER

AFTERGUT, JEFF H

ART UNIT

PAPER NUMBER

1733

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/616,060

Applicant(s)

REYNOLDS ET AL.

Examiner

Jeff H. Aftergut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11,13-18 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11,13-18 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 11, 13-18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Japanese Patent 3-260413 and Yates et al (US Patent 4,171,626) for the same reasons as expressed in paragraphs 2 and 3 of the Office action dated 9-8-05.

It should be noted that the Japanese reference '413 clearly stated that the layer 4 was wound at +/- 10 degrees to +/- 45 degrees. This clearly meant that the layer 4 included a blend of two fibers to form a hybrid fiber which were wound at an angle of both +10 degrees and -10 degrees to the axial direction of the shaft within the same layer. As the claim recites "winding a plurality of hybrid fiber layers...each hybrid fiber layer wound in an opposed lay direction to the previously wound hybrid fiber layer", the Japanese Patent '413 clearly taught winding a plurality of hybrid fiber layers (+10 degrees and -10 degrees or +45 degrees and -45 degrees or anywhere in between two layers of + and - fibers between 10-45 degrees) wherein the layers were wound in opposed directions to the previously wound layers (i.e. after a pass at +10 degrees the winding carriage was reversed and a -10 degree layer was applied). The use of both + and - direction fiber layers within the layer 4 for the drive shaft is additionally supported by Yates et al who at column 4, lines 51-61 defined the term "layer" and stated that "The term layer encompasses an alignment wherein the fibrous reinforcement is disposed therein at both plus and minus a given angle which optionally can be buildup in multiple

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passes.” Clearly, Japanese Patent ‘413 suggested several layers (two) within layer 4 wherein the layers were disposed at opposite angles to each other as one went from one pass to another during the winding of the layer 4.

### ***Response to Arguments***

3. Applicant's arguments filed 11-10-05 have been fully considered but they are not persuasive.

Applicant argues that the independent claims requires that one wind a plurality of hybrid fiber layers over the single fiber layer wherein each fiber layer is wound in an opposed lay direction to the previously wound hybrid fiber layer and that the reference to Japanese Patent ‘413 failed to teach the winding of a plurality of hybrid fiber layers but rather wound a single fiber layer of hybrid fibers as depicted with reference to the Figure as noted by layer 4. As noted above, within the fiber layer 4 of Japanese Patent ‘413 there is a sublayer of fibers which are oriented at +10 to +45 degrees and a second sublayer of fibers which are oriented at –10 to –45 degrees. While the reference depicted the hybrid as a single layer of hybrid fibers at 4, the layer included “a plurality of hybrid fiber layers” where each hybrid fiber layer was “wound in an opposed lay direction to the previously wound hybrid fiber layer”. In other words, the layer 4 of hybrid fiber in Japanese Patent ‘413 included fibers disposed at plus 10-45 degrees as well as fibers at –10-45 degrees within the same layer. Such an arrangement satisfied the requirement of a plurality (at least two) of layers which were wound at opposed directions to each other. The reference to Yates et al additionally supports the

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contention that the fibers within the layer were disposed at both plus 10-45 degrees and -10-45 degrees.

Applicant is additionally advised that one skilled in the art of drive shafts would have readily understood that if one did not provide two opposed fiber layers (both a plus and a minus layer for the specific angle orientation selected) that the drive shaft would fail in use as it would not be able to tolerate the twisting it was subjected to in use. In other words, one skilled in the art would have understood that the structure would have required a balanced assembly of the fibers in order to work properly.

Regarding claim 18, the applicant argues that the Yates reference did not cure the deficiencies of Japanese Patent '413 with respect to the number of layers and thus claim 18 was patentable. It should be noted in this regard that Yates et al supported the position that the layer of the drive shaft having the hybrid fibers therein in Japanese Patent '413 in fact had multiple fiber layers disposed at opposite angles therein. Additionally, applicant's arguments do not address the fact that Yates et al suggested that as opposed to a thermosetting resin material one skilled in the art would have understood that a thermoplastic resin material would have been useful for the composite tubular shafts therein as an alternative resin material. It is therefore believed applicant agrees with the interpretation of Yates et al in regard to the matrix resin which was known to the ordinary artisan.

In view of the foregoing, it is believed that the claims as presented are not patentable over the prior art applied and that a prima facie case has been established against the claimed subject matter.

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references to Ilzhofer et al, Gupta, Yates et al '951, Schwan '382, Yates et al '540, Yates et al '539, Yates et al '386, Yates et al '135 and Yates et al '472 all support the position set forth above and described by Yates et al '626 that the layer of hybrid fibers in Japanese Patent '413 which was wound at  $\pm 10$  to  $\pm 45$  degrees was made up of two layers which were at opposite directions (one plus and one minus) to the longitudinal axis of the shaft.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jeff W. Aftergut  
Primary Examiner  
Art Unit 1733

JHA  
December 13, 2005